DOCUMENT RESUME

ED 373 903 PS 022 647

AUTHOR Grady, Joan B.
TITLE Interdisciplinary Curriculum Development.
INSTITUTION Mid-Continent Regional Educational Lab., Aurora, CO.
PUB DATE 20 Mar 94
NOTE 11p.; Paper presented at the Association for Supervision and Curriculum Development Annual Conference and Exhibit (49th, Chicago, IL, March 19-22, 1994).
AVAILABLE FROM Mid-Continent Regional Educational Laboratory Resource Center, 2550 South Parker Road, Suite 500, Aurora, CO 80014 (free).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Descriptive (141)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Critical Thinking; Curriculum Design; Curriculum Development; Elementary Education; *Interdisciplinary Approach; *Problem Solving; Program Content; Student Evaluation; Teacher Characteristics; Teaching Methods; *Thematic Approach; *Thinking Skills
IDENTIFIERS Authentic Assessment; *Multidisciplinary Education; *Transdisciplinary Approach

ABSTRACT

Interdisciplinary curriculum is a methodology that can help students gain the necessary content knowledge to support the following basic skills: (1) using language well and thoughtfully; (2) thinking through a problem and experimenting with solutions; (3) understanding scientific and technological ideas and using tools; (4) using imagination; (5) understanding how people function in groups; and (6) learning how to learn independently. This paper discusses the interdisciplinary approach. It lists attributes of interdisciplinary work, traits of ideal interdisciplinary teachers, elements necessary for implementation, and personal issues teachers often have to deal with when involved in an interdisciplinary program. The paper includes a comparison of meta- or multidisciplinary approach, interdisciplinary approach, and the transdisciplinary approach. Components of the McREL Interdisciplinary Chunk Model discussed are: (1) theme; (2) focus; (3) lifelong learning standards; (4) content standards; (5) the learning experience; and (6) assessment. Tips for creating an interdisciplinary curriculum are also included. Contains 12 references. (TJQ)

Interdisciplinary Curriculum Development

Presented
by

Joan B. Grady

March 20, 1994

Mid-continent Regional Educational Laboratory
2550 South Parker Road, Suite 500
Aurora, Colorado 80014
(303) 337-0990

Interdisciplinary Curriculum

Herbert Kohl listed six skills that students need if they are to learn how to function effectively and compassionately as adults. They are the ability to: 1. to use language well and thoughtfully... 2. think through a problem and experiment with solutions... 3. understand scientific and technological ideas and use tools... 4. use imagination.. 5. understand how people function in groups... 6. learn how to learn something yourself. If one agrees with Kohl that these are the essential basic skills, then interdisciplinary curriculum is a methodology that can help students gain the necessary content knowledge to support these basic skills.

"Interdisciplinary learning is centered on themes or topics rather than on facts or concepts from within a discipline. It is generally focused on something of interest or importance in the real world." Tschudi, 1991.

"Interdisciplinary programs attempt to integrate the contributions of several disciplines to a problem, issue or theme." Meeth, 1978

"Recent brain research suggests that the brain searches for patterns and connections as a way of making meaning." Caine & Caine, 1991.

"Higher order thinking skills become a necessity as students begin to grapple with real issues and problems transcend the disciplines." Drake, 1993

Interdisciplinary work has certain attributes which enhance learning. Some of these include:

- Reinforcement and refinement of knowledge and skills.
- Student participation in a coherent learning experiences.
- Unified process and content goals that are unified.
- Students confronting content and reaching higher levels of abstract thinking.
- Analytical strategies applied to a variety of contexts both in and out of school.
- Emphasis on inquiry, analysis and understanding.
- Students with responsibility for sharing their discovered knowledge and skills.
- A multisensory experience.
- Creative problem solving.
- Students integrating strategies from the classroom to the world.

Traits of Ideal Interdisiciplinary Teachers

- volunteers
- able to implement the product
- love teaching and students
- willing to learn
- risk takers

- demonstrates interpersonal skills
- perceives the teacher as facilitator
- generalists who "love" a specialized area, or
- specialists interested in a generalized approach
- innovative and creative
- have taught more than one subject
- technologically literate

Implementation

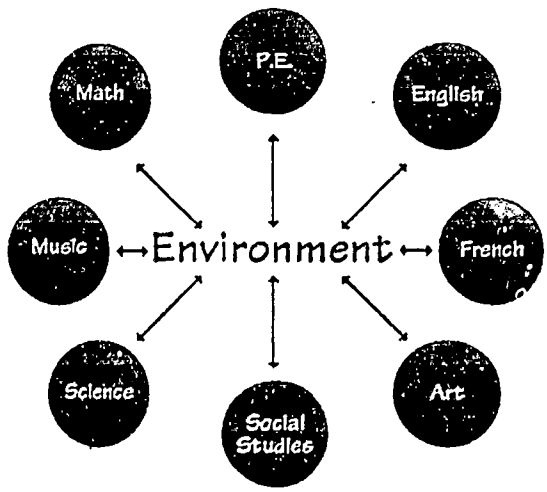
- administrative support
- school schedules and their flexibility
- available planning time for teachers
- resources
- leadership of the teacher planning team
- assessment and accountability
- parent/community acceptance
- flexibility in scheduling
- available time

Teachers involved in this process often find that some personal issues have to be dealt with including:

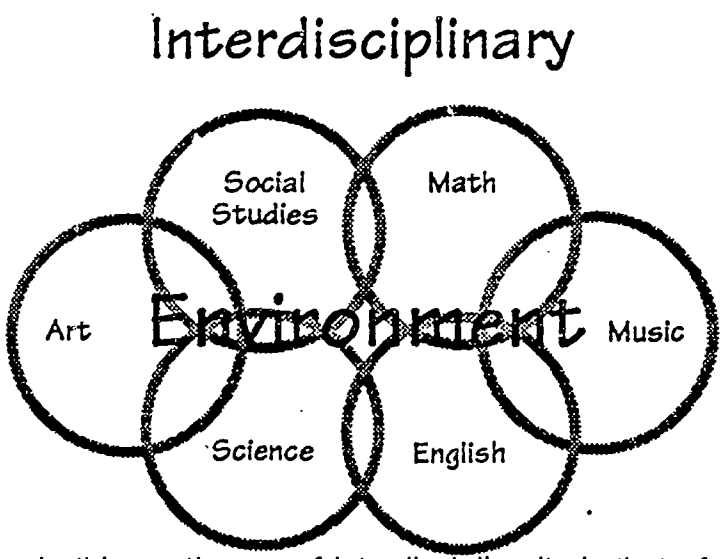
- their own view of the meaning of their discipline.
- anxiety and frustration from trying to "cover" and integrate content.
- conflicts that arise within the teaching team.
- learning and teaching styles of the teachers on the team.

Meta- or multidisciplinary curriculum delivery occurs when teachers from a variety of disciplines agree on a single theme or topic but individually, for the most part, continue to teach students in isolation. Very little, if any, common teacher planning time occurs. Students in meta/multi disciplinary classes know that various teachers and subjects are focusing on a single topic but there is very little connection made between the various disciplines by either the teacher or the students. In this simplistic version of interdisciplinary curriculum, teachers and students remain in their content area classrooms and deal with a single theme but only through the lens of that content area.

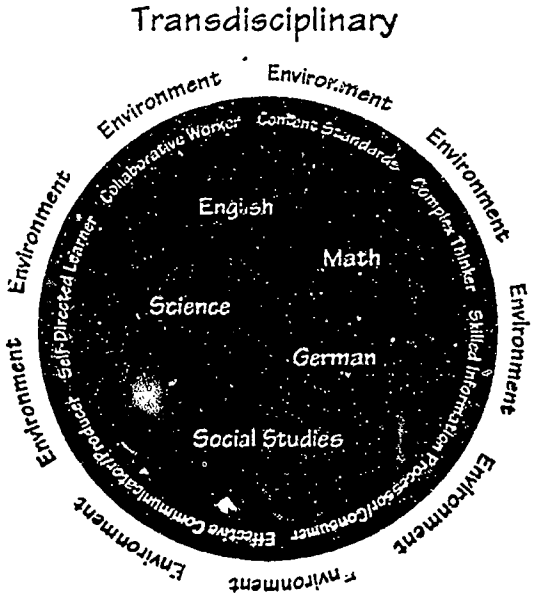
Meta/Multi-Disciplinary



Interdisciplinary curriculum presents content across the disciplines by blending teachers' approaches and students' inquiry. Students examine the topic or issue through one of many complex reasoning processes selected by the teachers who have planned the interdisciplinary curriculum. Classes are often held independently of one another with an occasional meeting of all the students and teachers involved in the process. There is considerably more planning to this version and teachers spend time after the initial design planning in meeting to provide continuity to the interdisciplinary process. It is important for teachers to hold an ongoing dialogue throughout the implementation stage to discuss successes as well as concerns related to the interdisciplinary curriculum in progress.



A final distinction in this continuum of interdisciplinarity is that of a **transdisciplinary** approach. It goes beyond the mastery of aspects of a single discipline or multiple disciplines, blurring the boundaries between disciplines and is the most complex to design, develop and carry out, particularly in a traditional setting. In such an approach the contribution of each of the disciplines comes into play under a common set of criteria or standards to provide a richer perspective on a given topic or event (Drake, 1993; Tchundi, 1991). The learning evolves from the integration of the disciplines within the topic, issue or problem. The interrelationships between the disciplines become part of a learning experience that has real life impact and connection. The process gives meaning and relevance to content and allows students to attain a higher level of conceptual learning than the usual level of knowledge and skills from a single subject. It is important to remember as Gardner (1994, 17) notes, "However, such work can only be legitimately attempted if one has already mastered at least portions of the specific disciplines." The transdisciplinary process requires preplanning, design work, and continuous interaction among the teachers and students who are involved in the process. Blocked time in the schedule is important for the transdisciplinary process to function effectively..



THE McREL INTERDISCIPLINARY CHUNK MODEL

The six elements of the McREL Interdisciplinary Chunk Model are:

- Theme
- Focus
- Lifelong Learning Standards
- Content Standards
- Learning Experiences
- Assessment

The **Theme** is an overarching idea at the highest level of abstraction or generality that enables teachers and learners to organize, synthesize and interpret information. A theme, concept and/or generalization transcends disciplinary boundaries, allowing examination of "issues, problems, school content, and the world as a whole from many different perspectives" (Tchudi, 16-17). Writing curriculum around a Theme ensures that the learning will be relevant and meaningful; it allows learners to make intellectual connections and invites curiosity, inquiry and thoughtful confrontation with a wide variety of concepts.

Use of a Theme to plan curriculum does not preclude either spontaneity or response to the "teachable moment." The teacher and learner need the freedom to capture, explore and take advantage of student interests, significant happenings and world events as they occur. Curriculum planning around a Theme should never limit the creativity of the teacher or learner as they respond to the world around them.

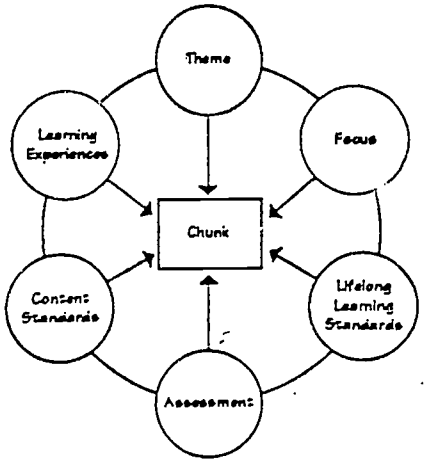
The careful choice and development of a Theme is essential to the success of a interdisciplinary curriculum. Useful Themes, concepts and/or generalizations are central to the content to be learned, accessible at the learner's level of development, relevant, allow the learner to make connections with previously acquired knowledge, and invite curiosity and inquiry.

The **Focus** is the specific illustrative context within which the Theme is explored or developed. It narrows the broad Theme so that it is intellectually and instructionally manageable. An appropriate Focus engages the learner, creating a mind set for learning; provides the curriculum developer and implementor a context for organizing learning experiences; and helps learners connect to real life through exploration.

Lifelong Learning Standards may be determined at the district, state or national level. These standards usually describe how the graduate should function in the real adult world, in terms of what he/she should know, do, or be like. Various taxonomies of thinking skills are often included as part of a list of Lifelong Learning Standards. The McREL Model includes the following: Complex Thinker, Skilled Information Processor/Consumer, Effective Communicator/Producer, Self-Directed Learner, Collaborative Worker

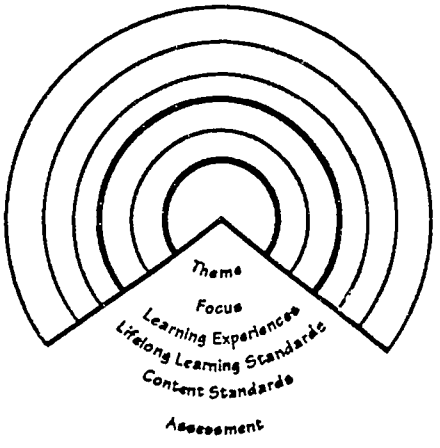
Content Standards are being developed on a national level by experts in all subject areas. These may also be available at a state, district or school level.

Network Graphic



Interdisciplinary Chunk

Sector Graphic



Interdisciplinary Chunk

The **Learning Experience** consists of the approaches and dispositions that the teacher and learner engage in to attain the targeted Standards stated for a particular Theme idea within the Focus. This section details what will occur in the classroom on a daily basis and should develop and enhance understanding within each discipline.

The majority of the time invested in a chunk involves teachers and learners in Learning Experiences. The teacher and learner are working in a co-creative environment; there must be an element of student and instructor choice in the design and implementation of the Learning Experience. The style of the activity may be didactic or discovery. The environment may vary widely, and choices should include nontraditional ones. It may be possible for the student to select from a menu of Focus Ideas, Assessment Options, or Standards. Social structuring should vary from individual work to collaborative group efforts. Media should range from reading books or viewing videotapes through listening to guest speakers to conducting and reporting on interviews.

Types of Learning Experiences might include: data collection, experimentation, research, case studies, interviews, simulations, writing position papers, oral presentations.

Assessment collects evidence of interdisciplinary learning by engaging students in performances that target knowledge, skills and attitudes identified by Lifelong Learning Standards and Content Standards and makes the results and interpretations of results available to appropriate audiences, including the learner him/herself.

Authentic, performance-based assessments require the learner to engage in experiences and solve problems using a variety of processes, methods and approaches. Such assessments:

are open-ended,
are not solvable by a single or routine method,
require depth of understanding,
require the pulling together of a number of ideas from varying contexts,
require some demonstrated performance, and
involve realistic situations.

Issues to Consider

In working through the process of creating interdisciplinary curriculum chunks, the following should be considered.

- Avoid the tendency to protect a particular discipline, always working for the common good of the interdisciplinary experience.

- Think beyond current physical and scheduling constraints (classroom, scheduling, resource). Plan for the ideal situation and work to make that situation a reality.

- Seek resources from the larger community.

- Make compromises when necessary, but only after attempts have been made to resolve problems.

- Generate ideas that will deepen learner understanding within each discipline. It is not sufficient to merely "use" math in a superficial manner.

- Expect to have definitions and understanding of the components become more familiar and easier to work with as experience and collaboration continue.
- Develop a pool of content-rich themes, concepts and procedures that lend themselves well to interdisciplinary chunk development. Ideas should be shared with individuals and teams.

- Revise Theme, Focus, Assessment, etc. as necessary and appropriate.

Glossary

Authentic Assessment Performance-based assessments in which students demonstrate what they know or can do; relate to the world outside of school in context and/or in the skills students use.

Benchmarks Translate standards into what students should understand and be able to do at developmentally appropriate levels.

Content Standards A description of what students are expected to understand and be able to do within specific content domains.

Focus The specific context within which a Theme is explored or developed.

Interdisciplinary Focusing on the commonalities across disciplines; transcends the content and procedures of individual disciplines; shifts to an emphasis on and ordered and structured by higher order thinking and competencies.

Learner-centered Principles

Guidelines that contribute to improvements in teaching learning and education in general; based on research by psychologists and educators in the areas of learning, motivation and human development as well as conventional wisdom.

Learning Experience The specific approaches and experiences in which the learner engages to attain targeted standards.

Lifelong Learning Standards

A description of what students should understand, be able to do, and be like within most or all content domains as well as in the world of work and life in general; may be clustered under outcome areas.

Multidisciplinary Viewing content through a theme that relates to several disciplines; breaking down a few of the boundaries among subject areas but leaving disciplines intact thus allowing teachers to organize knowledge according to their own discipline.

Performance Assessment

A variety of strategies that give students the opportunity to demonstrate knowledge and skills in structured and unstructured situations; usually involves the application of knowledge and skills.

Rubric A set of criteria that describes levels of performance.

Theme An overarching idea, concept or generalization, at the highest level of abstraction, that transcends disciplinary boundaries and allows for the examination of issues from a holistic perspective.

Transdisciplinary Emphasizing meaning and relevance; takes a life-centered approach in that knowledge is explored via a real-life context; transcending disciplines which are embedded naturally within the context; includes an emphasis on life skills.

References

Caine G. and Caine, R.N. (1991). *Making Connections Teaching and the Human Brain.* Alexandria, Virginia: Association for Supervision and Curriculum Development.

Drake, Susan M. (1993). *Planning Integrated Curriculum: The Call to Adventure.* Alexandria, Virginia: Association for Supervision and Curriculum Development.

Gardner, H. and Boix-Mansilla, V. (1994). " Teaching for Understanding--Within and Across the Disciplines." *Educational Leadership.* 51:5, 14-18.

Grady, J.B., Kreuger, A.., Fanning, J., Whisler, J., Jesse, D., and Barlow, T. (1993). "A Process for the Development of Transdisciplinary Curriculum based on Learner-centered Principles." Unpublished manuscript available from the Mid-continent Regional Educational Laboratory, Aurora, Colorado.

Grady, J.B., Kreuger, A.., Whisler, J. and Fanning, J. (1993). "Integrated Interdisciplinary Curriculum Development Model." Unpublished manuscript available from the Mid-continent Regional Educational Laboratory, Aurora, Colorado.

Jacobs, H. H. (1989). *Interdisciplinary Curriculum: Design and Implementation.* Alexandria, Virginia: Association for Supervision and Curriculum Development.

Jesse, D. and Grady, J.B. (1994). "A Preliminary Evaluation of the Great Plains Alliance Interdisciplinary Curriculum Project." Unpublished manuscript: Available from the Mid-continent Regional Educational Laboratory, Aurora, Colorado.

Kendall, J and Marzano B. (1994). *The Systemic Identification and Articulation of Content Standards and Benchmarks: Update.* Aurora, Colorado: Mid-continent Regional Educational Laboratory.

McCombs, B. *et al.* (1993). *Learner-centered psychological principles: Guidelines for school redesign and reform.* Aurora, Colorado: Mid-continent Regional Educational Laboratory.

Meeth, L. R. (1978). "Interdisciplinary Studies: Integration of Knowledge and Experience." *Change* 10:10.

Tschudi, S. (1991). *Travels Across the Curriculum.* New York: Scholastic, Inc.